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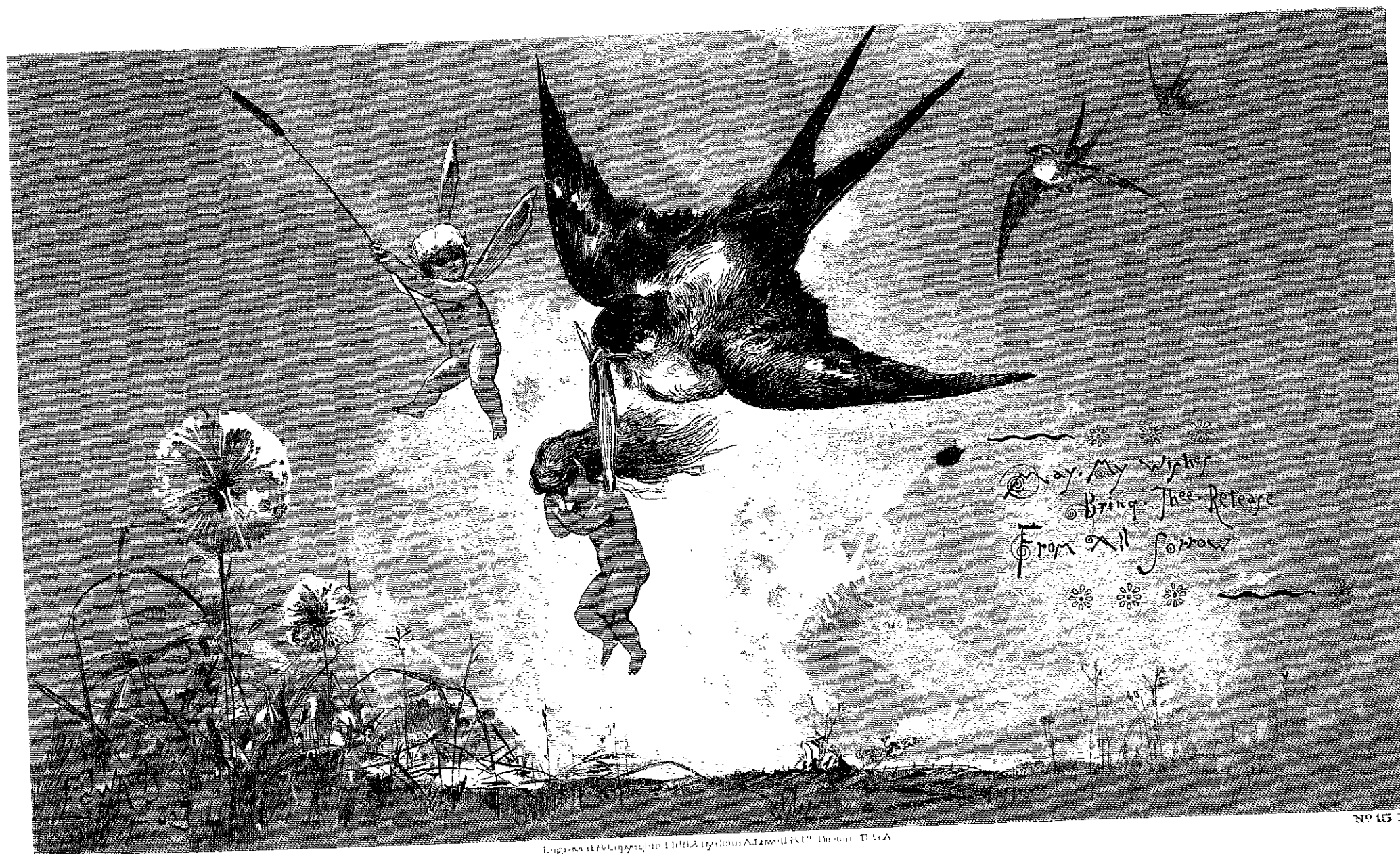
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The Tech.

VOL. II.

BOSTON, NOVEMBER 8, 1882.

No. 3.

THE TECH.

Published on alternate Wednesdays, during the school year, by the students of the Massachusetts Institute of Technology.

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of engineering are divided and subdivided into special branches. The mechanical engineers perhaps might think that, when building a large machine shop, it would be better to lay out the foundation themselves, and thus save the expense of obtaining a surveyor's services. When they do this, however, they are doing something which belongs to another profession, and, were it to be made a general practice, the civils now studying in the Institute had better commence found necessary to call attention to a considerable delinquency in this respect, especially among the students of the entering class. We think that under the existing circumstances the editors and directors have the right to expect a unanimous support by subscription from members of the school. Even if the contents of the paper were not found of especial interest, it would seem to be the duty of each one who has any feeling of loyalty toward his Alma Mater and pride in the results of her work to assist in making the publication more interesting by his own contributions, or at least render it easier for the editors to carry out their plans for

improvement, if only by adding the amount of a subscription.

But the direct advantage of our paper to the students comes not alone through the matter in the columns, for in the general reading-room of the Institute are to be found weekly and monthly magazines, college papers, and scientific journals, which are open to all comers. The sum of the subscription prices of these periodicals would no doubt, if paid in hard cash, amount to nearly one hundred dollars annually; and it would seem that the privilege of access to such a collection is worth many times the price of subscription to our own paper.

Every self-respecting fellow can but feel a contempt for those whose selfishness permits them to make use of these privileges without attempting to do their part in defraying the unavoidable expense of maintaining them.

We are inclined to think that some of the students — the Freshmen in particular — have not had this matter presented in its true light; and we hope there may be hereafter a considerable increase in the subscription list and more general literary contributions from the students.

NOW that work has actually begun upon the new building, it would seem fitting to give an idea of its general arrangement, as far as can be done at present.

In the plans which are now under consideration, the building will cover about as much ground as the present one does, and will be five stories in height, including basement.

The Chemical Department will occupy, with its laboratories, the fourth story, with the lecture-rooms on the third, connected with it by means of special staircases. The laboratories will be fitted out in the most approved manner, the floors being fire and water proof, the hoods con-

structed so as to completely remove all gases and vapors, and everything connected with the department will be constructed on the latest scientific principles.

The Architectural, Geological, and Mineralogical Departments will probably be on the second floor; but the exact size and arrangement of the rooms have not been decided upon.

On the main floor, with an entrance direct from Newbury Street, will be a hall, seating between three hundred and four hundred persons. A hall of this size has long been needed at the Institute, where for many purposes Huntington Hall has been found too large, and Room Four not large enough.

There will also be, probably on the first floor, a large library and reading-room, open to students of all departments.

The three main features of the Institute as originally founded were, a Society of Arts, a School of Industrial Science, and a Museum of Arts. The former two, as all know, have an existence; the latter, so far, has existed only by name, as there has been no room for the specimens contributed to be placed in a separate hall. In the new building there will be one or more rooms devoted to this Museum, the nucleus of which is now scattered over the old building.

In a later edition, as soon as the drawings have been decided upon, we hope to give sketches of the plans and elevations, in connection with a more detailed account of the new building.

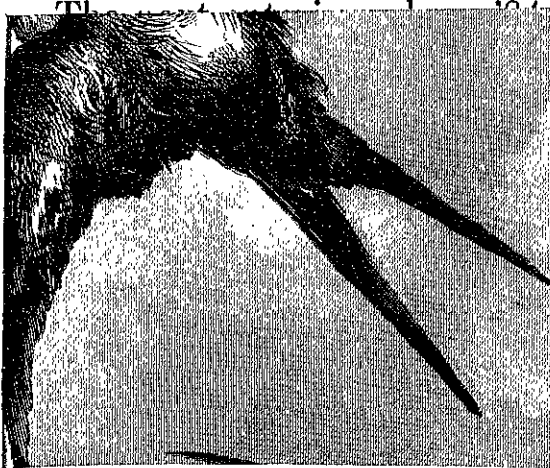
THE holidays are fast approaching, and it will not be long before definite action must be taken concerning the occasion which, in accordance with the usual programme, comes first among the winter jollities of our students, — the Freshman Ball. In considering this subject, some account of the experience of preceding classes may be worth the attention of the Freshmen.

For a number of years preceding 1879, it had been customary for the cadets of the C. C. M. I. T. to give an exhibition drill in the gymna-

sium at about the time of the semi-annual examinations, and also at the close of the year. Music was generally in attendance, and after the drill the floor was waxed and cleared for dancing.

The cadets and their invited friends always made the most of these opportunities, and the dances were thoroughly enjoyed. Being held in the afternoon, they were very informal, and perhaps on this account were the more enjoyed by the majority of the students.

The class of '83 was the first to establish a more formal affair, and in its Freshman year a "Semi-Annual Dance" was given by the class in the gymnasium, which was tastily decorated on the interior for the occasion. The success of this evening prompted the establishment of a complimentary ball, to be given each year by the three lower classes to the graduating class, and the first "Annual Ball" was held in Odd Fellows Hall in April the same year, — given by '81, '82, and '83 to '80.



has been a considerable number of men to whom the assessment levied for this purpose, or a subscription often times fully as imperative, has been no small burden. The present class is very large, and this objection may not hold; but it is worth the consideration of the class before action is taken this year.

Hitherto the dance has occurred but a short time before the semi-annual examinations, and this, in order to give sufficient interval, has delayed the annual ball until the very end of the season, a somewhat unfavorable time.

The latter ball is justly regarded as the principal event of the year, and the requirements for

its success should take precedence. We would therefore urge upon the members of the Freshman class the necessity of so arranging matters that there may be no interference with other occasions, which may best be done by placing the date as early as is convenient. With this improvement we think there is promise that the affair will be as complete a success as '86 itself can desire.

IT would appear that surveying is fast becoming one of the most popular studies in the Institute; for besides those taking the Civil and Mining Engineering Courses, in which surveying is a fundamental study, a number of students in other courses seem to think that a knowledge of this branch is very essential to them.

This may be true, but it seems to us extremely doubtful; for in these days a man cannot be a Jack-of-all-trades, but must confine himself to a limited field in order to succeed; and, furthermore, it is well known that the main branches of engineering are divided and subdivided into special branches. The mechanical engineers perhaps might think that, when building a large machine shop, it would be better to lay out the foundation themselves, and thus save the expense of obtaining a surveyor's services. When they do this, however, they are doing something which belongs to another profession, and, were it to be made a general practice, the civils now studying in the Institute had better commence and take mechanical engineering enough to enable them to build a turn-table and other necessary mechanical devices. All this would, of course, be legally right, but we do not like to see making its way into the Institute and the several professions the practice which has sprung up among merchants of dabbling into trades not their own, as is done, for instance, by large dry-goods dealers during the holidays, when they sell large numbers of books, etc., outside their regular line of business.

If, however, so many students are to take surveying, more instructors and more instruments should be furnished for this branch.

Last term it was no uncommon sight to see seven and eight men to a single level at work in the field, and this term some dissatisfaction has been shown in reference to field work. Last year there were but two levels in the Institute, and now, even with the newly furnished O'Grady instruments, the department is not supplied as well as could be wished for.

Contributions.

Geology of Lake Mohawk.

THIS lake, which is famous for its wild scenery, its deep and clear water, and its remarkable position, is situated in the southern part of Ulster County, New York, about fifteen miles west of the Hudson River. Its waters, which are twelve hundred feet above sea level, occupy a gorge in the top of the Shawangunk Mountains, a range extending from New Jersey to the northern part of Ulster County. Mather, in his geological report of the First District of New York, says that he knows of no range of equal length which has so few breaks. Several do occur, however, and one especially prominent is at Lake Mohawk. The breaks are transverse in most cases, and are marked by high cliffs facing toward the south. Some faulting occurs, also, not in direct connection with the breaks.

While visiting at the lake last summer, I made the following observations:—

Length of lake is about one half mile, width about one hundred yards, trend northwest by north. Depth averages forty feet. There is neither inlet nor outlet, the water being supplied by springs. On both sides of the lake arise perpendicular cliffs of quartzite conglomerate, belonging to the Clinton formation. The cliffs are highest at their southern ends. Sky Top, on the east side, rises three hundred feet above its surface; Eagle Cliff, opposite, is two hundred and twenty-five feet in height.

The pebbles of the conglomerate vary in size from a pea to a pigeon's egg. Forms are angular to subangular. Color of the rock is white,

varied by strata of pink or red. Texture is coarse in lower beds, and very fine in upper.

The strata of the rocks forming Sky Top dip to the east at an angle of fifteen degrees; those of Eagle Cliff vary in their declination, which is to the west, and at an average of about thirty degrees. The distance between the cliffs is about three hundred yards. A talus of immense boulders occurs at the base of each cliff.

The upper surfaces of the rocks present many evidences of glaciation, while none is apparent on the boulders or the face of the cliffs.

From these facts were drawn the following conclusions:—

1. The lake basin was formed by the rupture of a synclinal fold, and modified by erosion. The rupture may have been a simple crack or a double fault. Mather mentions such a fault as occurring in these mountains.

2. Eagle Cliff, having its beds exposed at greater angle, suffered most erosion, and is hence lower than Sky Top.

3. The texture of the rocks shows that the rocks were deposited on a falling sea floor.

4. The position of the glaciated surfaces shows that much of the erosion must have taken place since the glacial epoch. W. '83.

A MODERN JONAH,

— OR —

The New Twenty Thousand Leagues Under the Sea.

CHAPTER I.



agreed in placing his length between fifty and eight hundred feet, but varied slightly in other particulars.

THE year 1875 will always be memorable as the one in which occurred those frequent apparitions of the sea-serpent. The log of each returning ship would recount a meeting with the monster; the public prints teemed with theories and descriptions, and public interest was at fever heat. All accounts

The few discrepancies which did occur, however, could be traced to the double refraction induced when the glass used by the observer contained anything stronger than beer.



The wonderful activity of the animal was attested by the newspapers which on one and the same day chronicled his appearance in San Francisco Harbor and off the beach at Coney Island. Two days later an officer of the United States ship "Phantom," then stationed in the Mediterranean, went on deck in the evening to relieve a slight headache brought on by hypochondria, or lowering of spirits. As he leaned against the gunwale and playfully remarked to a passing boatswain, "'Tis better to have supped and lost

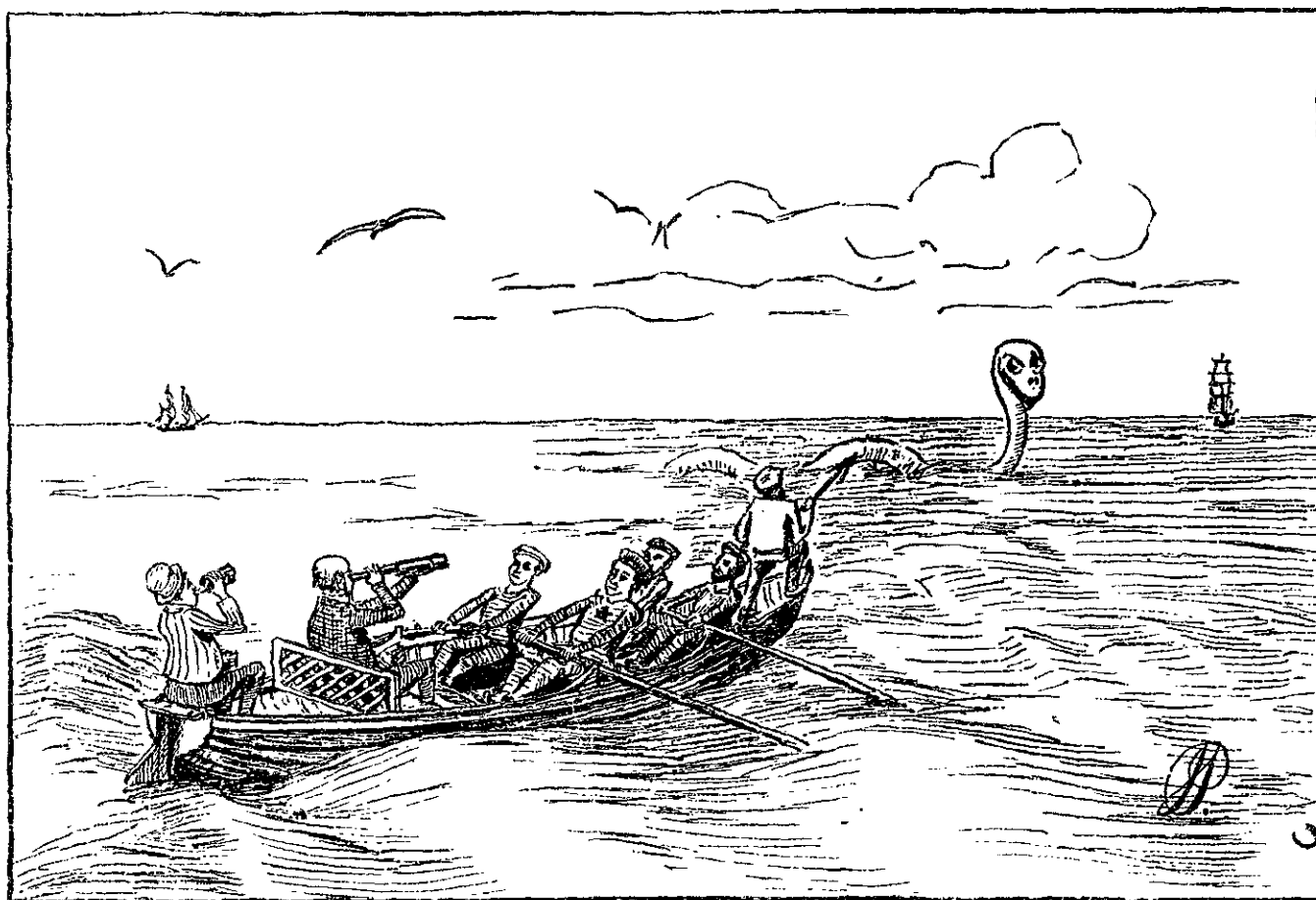
than never to have supped at all," the moon passed behind a cloud and a brilliant phosphorescence lit up the sea an eighth of a mile away. Officers and men hurried on deck in response to repeated calls, but none could explain the phenomenon. The strongest glass on board showed only a magnificent irradiation,—until suddenly an enormous head, whose burning eyes lit up the sea for miles around, rose out of the water and revealed a new phase of the ubiquitous sea-monster.

The guns were swung into position and an old gray-headed harpooner took his place under the bowsprit as the ship started in pursuit. The bridge trembled under the heavy pressure of the steam, but the serpent, as though disdaining a race, leisurely swam around the vessel, and then gracefully dove below just as the fore-castle gun flashed and a shell rebounded from the water.

The presence in the sea of a monster so formidable naturally alarmed the public mind, and the stock of steamship companies rapidly fell. It was at this crisis that Mr. P. T. Barnum, with his customary enterprise and liberality, determined to capture the monster at his own expense, and, having fitted out an expedition, invited me to be its scientific head.

New York was agog on the day fixed for our departure. Hourly extras were issued by the papers, flags were flying, and as we passed down the harbor and into the





bay with a crowd of accompanying tugs and ferry-boats the artillery companies at the forts presented arms and fired a salute. Soon we coasted along the sandy shores of the Hook, which were black with the thousands who had gathered for a parting cheer. Here our cortege left us after a babel of steam whistles and hurrahs, and returned to the city with flags at half mast. Then we slowly realized the gravity of our undertaking, and at the same time our buoy — and gal — lant steamer passed out into the broad waters of the Atlantic.

CHAPTER II.

I stayed on deck for a short time, but the rocking of the steamer soon drove me below for a quiet nap. I remained in my berth somewhat longer than I intended — three days in fact — and when I at length got up I found that my faithful Samuel had arranged my books and instruments. Sam was an invaluable product of our complex American civilization. He combined the vivacity of a Frenchman with the soberer qualities of the German, and to the deference of an English servant he added the wit of a true son of Erin. He entered into all my enterprizes as though they were his own, and into the present one no less than the others. Even his enthusiasm began to cool, however, as day after day passed without incident. A few whales or a floating mass of sea-weed from time to time made the pulses of all on board beat high with expectation only to sink far lower when the disappointment was known. Thus it went on till the days lengthened into weeks, but still no sign of the monster which had before seemed everywhere.

"Ah! Sam," said I one day, after another of these disappointments, "how foolish we were to start on such a chase! We might have been home long ago."

"Yes," said Sam, "in the little room in the museum, with your fossils all arranged and your great book on *The Emotional Nature of the Edible Mollusks* already published."

The reference to my book made my spirits sink lower than ever, and it was with unfeigned pleasure that I heard the captain say to me, —

"I am convinced, Professor, that our search is useless. We have done all that can be done, and we start for New York to-morrow."

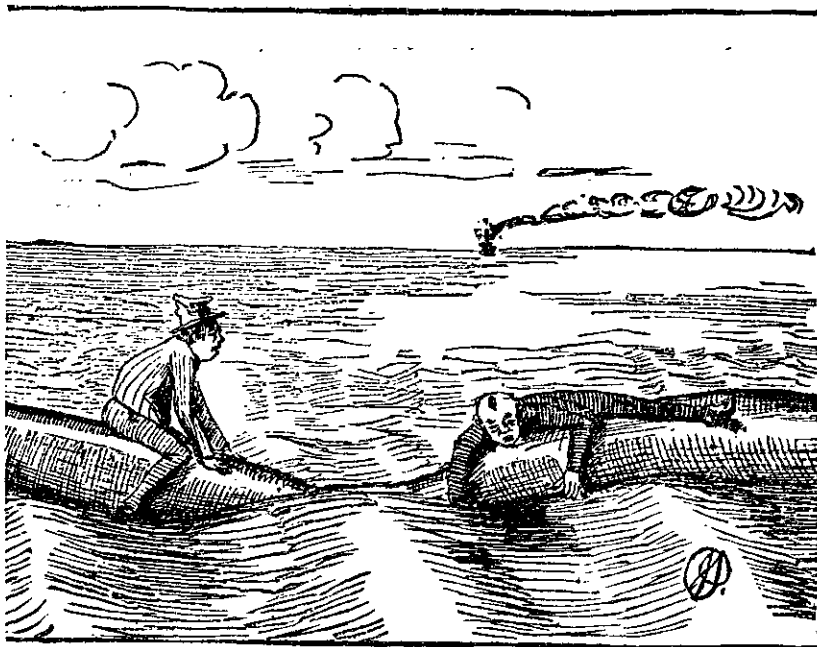
The news rapidly spread among the crew and was received with the utmost joy. All went to sleep that night impatient for the morrow. Early the next morning I was awakened by Sam, who knocked loudly at my state-room door, and shouted, "Master! Master! come up on deck." I seized my telescope and hurried up-stairs, where I soon found the cause of the summons. Far away on the horizon a dim speck was seen, which in the telescope resolved itself into a raft, bearing a confused mass at the base of a mast from which floated that universal signal of distress at sea, a shirt.

CHAPTER III.

The ship was quickly put about and every preparation made on board for the relief of the unfortunates. As we drew nearer, the confused mass became more clearly defined, until we saw two human figures, both apparently in the last stages of exhaustion. One of them held, tightly clasped in his hand, a dark-colored bottle,

—doubtless all he had saved from the wreck, and containing a few drops of a brownish liquid. Later in the day I applied a few tests to the fluid, and even tasted it; but the smallness of the sample prevented my making a complete analysis. I felt justified, however, in concluding that it was an impure hydrate of one of the radicals of the marsh-gas series, and my heart warmed toward its possessor, who was doubtless a scientific man.

We came up to the raft in about half an hour and tenderly lifted its occupants on board. Their very tired condition and long exposure rendered the most careful treatment necessary, and I attended them myself in the captain's cabin. There was little change in their condition during the first twenty-four hours, but on the second day they awoke from their stupor and talked incoherently of snakes and serpents. It occurred to me with almost painful suddenness that they had doubtless seen the very thing we sought. I soon

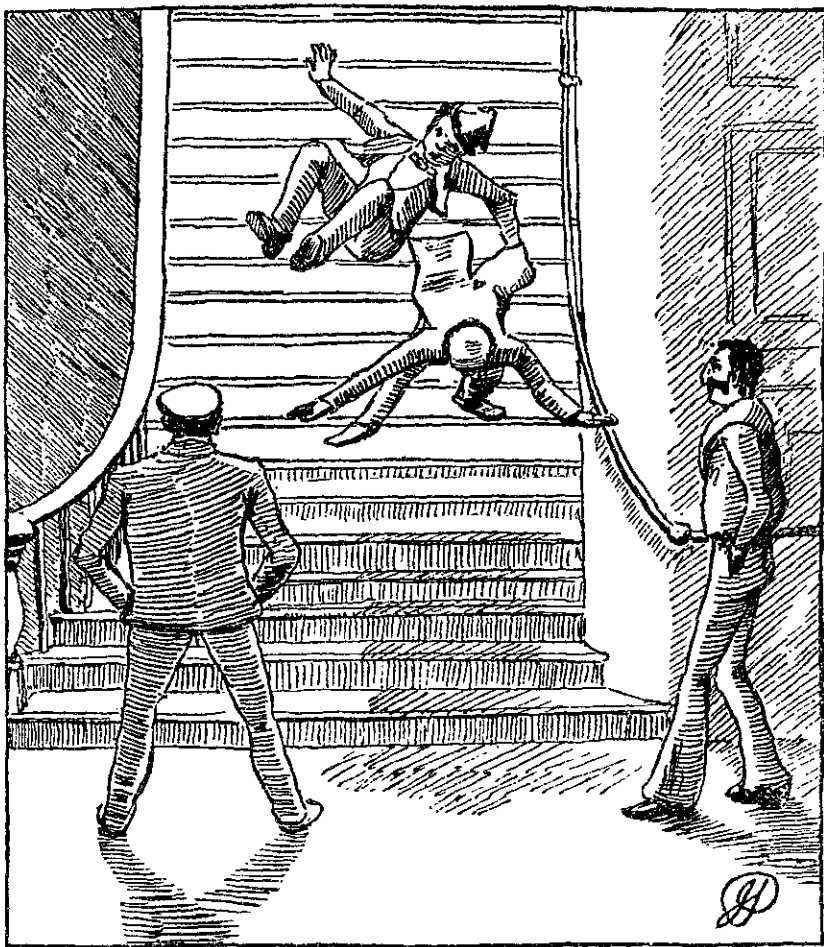


convinced the captain of the probable truth of my surmise, and he consented to remain in our presents neighborhood three days longer. Should we see nothing in that time the head of our ship would be turned toward home and our expedition pronounced a failure. The next three days were ones of feverish activity to all on board. I trusted to Mr. Barnum's liberality, and offered a thousand dollars to the man who should first sight the object of our search. The crew scarcely slept; all spent the nights in watching, but in vain. The allotted time passed without incident, and the order was given to turn the ship about. We had proceeded about half a mile in our new direction when Sam startled all on board by shouting, "The thing itself, I'll bet a quarter." All eyes turned in the direction indicated, and sure enough in the spot so lately occupied by our vessel appeared the veritable sea-serpent. His head was raised high above the water

and his long body curled in a graceful spiral far behind. All was excitement on board. The captain's gig was manned immediately, and I took my seat in the stern, armed with the ship's telescope. As I never travel, even for a very short distance, without a tooth-brush and light garment for nocturnal wear, Sam, with his inseparable crush hat, out to its fullest extent, was also allowed in the boat, to look after my bag and a large bottle of *spiritus frumenti*, which I took along in case any of us should be bitten by the serpent. With a silent wave of the hand to those on board the ship we rowed away and neared the monster. He apparently took no notice of our approach, but remained almost motionless where first observed. We soon were almost upon him, so near that we could observe the heavy folds and wrinkles of his skin. The man in the bows straightened his arm with a rapid movement, and was about to hurl the harpoon, when a sudden crash was heard, and a tremendous shock at once shattered our boat and threw us all high into the air, while beneath an enormous whale-like body rose out of the water.

We saw then that what all the world had taken for the sea-serpent was in reality this unknown creature's gigantic neck. The same shock which shattered our boat threw me far forward, and I was closely followed in my parabolic course by Sam.

He was soon astride of the great neck, cold and dripping and with hat collapsed. With great difficulty I placed myself in a similar position of comparative safety, and I had scarcely done so when the monster started off at a rapid rate, leaving those poor wretches, our companions in the boat, still struggling in the water. Sam and myself remained in our perilous position until long after nightfall. Our spirits were at the lowest ebb, and I felt myself slowly slipping back into the water, when suddenly the motion ceased, the great head sunk down upon the surface of the sea, and again the eyes threw out that inexplicable radiance first noticed on board the "Phantom." At the same time the enormous body, which had sunk below the surface, rose again and the creature lay at full length along the water, apparently asleep. A ray of hope came to me with the idea that we might husband our failing strength by swimming to the body and resting for a time upon it. After repeated efforts we found ourselves upon the broad back, and threw ourselves out at full length. I was greatly pleased to find that Sam had kept hold of the bottle of *spiritus frumenti* throughout all. Although we were sure that our animal was no longer a serpent, the snake-like contour of his neck still led me to take a large dose of the preventive. I was about to pass the bottle to Sam, but was astonished to find it empty. He grumbled loudly at his unprotected condition, but said he did n't care a rubber dam if he only got his thousand dollars. At the mention of



SWELPMEJOVA.

a paltry thousand dollars I sprang to my feet; my spirits had been rising for several minutes, and I exclaimed, —

“Sam ('ic) uel! If we only get out of this alive we shall be rich men, — we shall be famous men! The animal we stand on is none other than the ancient Plesiosaurus, long supposed to be extinct, and whose existence will overthrow all the theories of modern geolo — ”

My closing remarks were forever lost. The back of the creature seemed suddenly to give way beneath me. I was precipitated with violence down a flight of stairs and into a brilliantly lighted interior, while from the lips of the individual at whose feet I fell came the single ejaculation, “Well, swelpmejova!”

(TO BE CONTINUED.)

Our Athletic Club.

EDITOR TECH, — A correspondent in the TECH of Oct. 11, while urging the liberal support of the foot-ball team, says, “All our athletic performances, with the exception of the tug-of-war team’s record, have been disappointing and disheartening.” Surely this is not a fair estimate of the results attained by the M. I. T. A. C., considering the few years it has been in existence and the small number of men

belonging to it. Have the nine-foot-four-inch pole vault of Mr. Sturgis, and Mr. Dorchester’s eight-foot-six-inch high kick — both made only last winter — so soon been forgotten? I cite several more of our records, which, even if compared with those of Harvard at its recent fall meeting, are still good, and should encourage further efforts: —

One-hundred-yard dash, $10\frac{3}{4}$ seconds, T. C. du Pont.

One-quarter-mile run, 57 seconds, F. M. Haines.

Running high jump, 5 feet $3\frac{3}{4}$ inches, J. L. Kimball.

Putting the shot, 31 feet 11 inches, F. O. Harriman.

These should be enough to prove that there is more than “one branch of athletics in which the Institute can do herself credit.”

It is hoped that the Faculty will not see fit to rent our new gymnasium to Chauncy Hall School, as the sum received cannot compensate for the injury to apparatus and the interruption to regular exercise caused by these school-boys.

A. L. R.

Department Notes.

THE Seniors have just been assigned the problem of the billiard-hall and boat-house. Three weeks have been allowed for the completion of an elevation, section, and plan; and, as far as present appearances go, the designs will be in better taste and more varied than usual. It is likely that Prof. Clark will continue his lectures on specifications to the Seniors.

The Juniors have not begun on problems as yet, the usual elementary doorways and windows occupying their time until Thanksgiving. Prof. Letang is giving the lectures on the Elements of Architecture this year, and what with the “brown papers” for him, the work in Descriptive Geometry, for Mr. Wells, and the drawings for Prof. Clark and Mr. Kidder, their time is pretty well filled up.

Probably Mr. Langenfeldt will not have charge of the class in water-colors until after Christmas.

In a very severe trial of the Perkins marine engine and boiler, lasting for twelve hours, with four hundred pounds' pressure, the total consumption of fuel was 1.79 pounds per indicated horse-power per hour.

The Fitchburg Railroad is building improved passenger cars. The seats are upholstered so as to make a comfortable rest for the head, and fenders keep cinders from entering the windows. The cars are heated and ventilated by what is called the Spear System. Air is forced in by the motion of the car, passes through a furnace, and is distributed to registers connected with each seat. A new feature is the lavatory, which is placed at one side near the end of the car. Water is supplied from a tank with pressure derived from the air-brake system, and fifty feet of hose is attached for use in putting out fires.

THE late issue of the present number was caused by the non-arrival of the cuts for the illustrated article; the delay being occasioned by bad weather interfering with the photo-engraving process.

Athletics.

() OUR foot-ball team played its second game with Harvard on Holmes Field, Nov. 27.

In the first innings the Institute men seemed to get utterly demoralized, the Harvards having it about their own way, and it was with little difficulty that two goals and four touch-downs were scored by the Crimson; zero for M. I. T.

In the second half the M. I. T. braced up and really did some good work, for it was only after a sharp and close struggle that Harvard at the end of the innings succeeded, by a lucky kick from the field, in obtaining another goal. Referee, Goodwin. Umpires, Keith for Harvard, Fiske for M. I. T.

THE fall meeting of the H. A. A., which was held Oct. 28, on Jarvis Field, was well attended, but, with the exception of the remarkable running of Baker, was of no special interest.

THE Harvard Freshmen recently with thirteen men beat the 'Varsity eleven two goals to four touch-downs.

THE question of forming a lacrosse club at the Institute has for some time been agitated,

and it is with pleasure that we observe that the answer has at last taken tangible form. Though no fixed association has as yet been established, twenty-five or thirty men are already at work in the field with their crosses, and we may hope to have a regular club at no very distant date.

At Montreal, Oct. 21, on the Shamrock L. C. grounds, R. McKensie, Toronto, L. C., threw the lacrosse ball 140 yards 2 feet. This is now the best record in the world, supplanting 135 yards 3 inches by F. Lally at Toronto, Sept. 30, 1882.

THE YALE GAME.

The game was called at 3 P. M. The toss was won by the Techs, who took the goal from which the wind was blowing. Yale had the kick-off, and the ball was sent at once to the Institute's end of the field. Yale's men were on the ball very quickly, and a goal was kicked from the field for them inside the first five minutes, by Richards.

The Techs then kicked the ball off, but the superior weight of the Yale team again carried the ball very near the Tech's goal. After some sharp playing by both sides Yale secured a touch-down, but failed to score a goal.

At the end of the first three quarters, during which the ball was forced very near Yale's goal, the score stood 4 goals and 1 touch-down for Yale.

At the beginning of the last three quarters the Techs had the kick-off, and the ball went down to Yale's end of the field. The Techs were too light to keep it there, and the play was soon forced to the centre of the field.

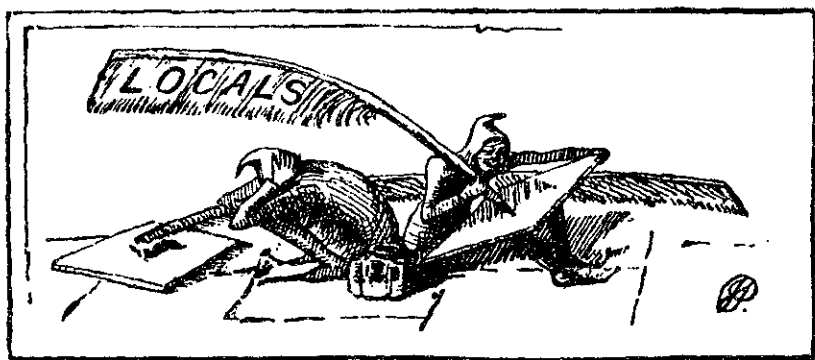
At the end of the game the score was 6 goals and 2 touch-downs for Yale, 2 goals being kicked from the field.

The Techs played well, and were highly complimented by the remarks of the spectators, the kicking of Haines being especially noticed.

The Institute team were ahead of Yale in throwing and catching the ball, and equal to them in tackling. In other points they were far behind, but with so little chance for practice it is not to be wondered at; in fact it is surprising that they play so well.

There are good grounds for the manifest dissatisfaction with the referee, many points which really ought to have been given to the Techs being given to Yale at critical points of the game. These decisions gave Yale a decided advantage, and made her score larger than it should be.

BOSS.



NOW is the time to subscribe to THE TECH.

Come up-stairs and see the new library and museum.

The Civils very much regret that soon they shall see Lull's face no more.

The Miners will probably play the Mechanicals next Saturday afternoon.

We are all glad to see Mr. Pickering's smiling face once more in the Physical Laboratory.

Mr Capen read a very interesting paper on "Jewellers' Sweeps" last Saturday morning.

During the past week the Civils have had sideboards added to their many conveniences.

It is said that after Thanksgiving the Seniors will again be treated to lectures in mechanics.

It is galling to a surveyor to be taken for a travelling photographer, but it is an every-day occurrence.

The lunch fiends, having been left by Mr. Blunt, have taken up new quarters on Dartmouth Street.

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The managers of the Olympian Club have issued a circular, in which they announce special rates to public schools, societies, clubs, and parties. Why should n't the Institute students have special rates?

In a very severe trial of the Perkins marine engine and boiler, lasting for twelve hours, with four hundred pounds' pressure, the total consumption of fuel was 1.79 pounds per indicated horse-power per hour.

The Fitchburg Railroad is building improved passenger cars. The seats are upholstered so as to make a comfortable rest for the head, and fenders keep cinders from entering the windows. The cars are heated and ventilated by what is called the Spear System. Air is forced in by the motion of the car, passes through a furnace, and is distributed to registers connected with each seat. A new feature is the lavatory, which is placed at one side near the end of the car. Water is supplied from a tank with pressure derived from the air-brake system, and fifty feet of hose is attached for use in putting out fires.

THE late issue of the present number was caused by the non-arrival of the cuts for the illustrated article; the delay being occasioned by bad weather interfering with the photo-engraving process.

Athletics.

() OUR foot-ball team played its second game with Harvard on Holmes Field, Nov. 27.

In the first innings the Institute men seemed to get utterly demoralized, the Harvards having it about their own way, and it was with little difficulty that two goals and four touch-downs were scored by the Crimson; zero for M. I. T.

In the second half the M. I. T. braced up and really did some good work, for it was only after a sharp and close struggle that Harvard at the end of the innings succeeded, by a lucky kick from the field, in obtaining another goal. Referee, Goodwin. Umpires, Keith for Harvard, Fiske for M. I. T.

THE fall meeting of the H. A. A., which was held Oct. 28, on Jarvis Field, was well attended, but, with the exception of the remarkable running of Baker, was of no special interest.

THE Harvard Freshmen recently with thirteen men beat the 'Varsity eleven two goals to four touch-downs.

THE question of forming a lacrosse club at the Institute has for some time been agitated,

and it is with pleasure that we observe that the answer has at last taken tangible form. Though no fixed association has as yet been established, twenty-five or thirty men are already at work in the field with their crosses, and we may hope to have a regular club at no very distant date.

At Montreal, Oct. 21, on the Shamrock L. C. grounds, R. McKensie, Toronto, L. C., threw the lacrosse ball 140 yards 2 feet. This is now the best record in the world, supplanting 135 yards 3 inches by F. Lally at Toronto, Sept. 30, 1882.

THE YALE GAME.

The game was called at 3 P. M. The toss was won by the Techs, who took the goal from which the wind was blowing. Yale had the kick-off, and the ball was sent at once to the Institute's end of the field. Yale's men were on the ball very quickly, and a goal was kicked from the field for them inside the first five minutes, by Richards.

The Techs then kicked the ball off, but the superior weight of the Yale team again carried the ball very near the Tech's goal. After some sharp playing by both sides Yale secured a touch-down, but failed to score a goal.

At the end of the first three quarters, during which the ball was forced very near Yale's goal, the score stood 4 goals and 1 touch-down for Yale.

At the beginning of the last three quarters the Techs had the kick-off, and the ball went down to Yale's end of the field. The Techs were too light to keep it there, and the play was soon forced to the centre of the field.

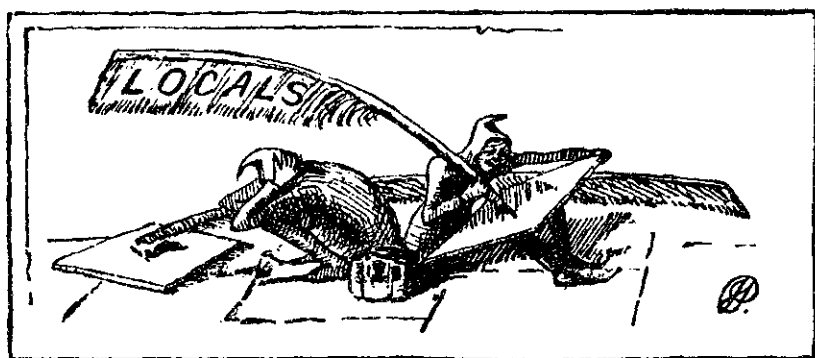
At the end of the game the score was 6 goals and 2 touch-downs for Yale, 2 goals being kicked from the field.

The Techs played well, and were highly complimented by the remarks of the spectators, the kicking of Haines being especially noticed.

The Institute team were ahead of Yale in throwing and catching the ball, and equal to them in tackling. In other points they were far behind, but with so little chance for practice it is not to be wondered at; in fact it is surprising that they play so well.

There are good grounds for the manifest dissatisfaction with the referee, many points which really ought to have been given to the Techs being given to Yale at critical points of the game. These decisions gave Yale a decided advantage, and made her score larger than it should be.

BOSS.



NOW is the time to subscribe to THE TECH.

Come up-stairs and see the new library and museum.

The Civils very much regret that soon they shall see Lull's face no more.

The Miners will probably play the Mechanicals next Saturday afternoon.

We are all glad to see Mr. Pickering's smiling face once more in the Physical Laboratory.

Mr Capen read a very interesting paper on "Jewellers' Sweeps" last Saturday morning.

During the past week the Civils have had sideboards added to their many conveniences.

It is said that after Thanksgiving the Seniors will again be treated to lectures in mechanics.

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Some of the mechanicals talk of adopting a professional badge. "What! know you not, being mechanical, you ought not walk upon a laboring day without the sign of your profession?" — *Shakespeare*.

At a recent meeting of the 2 G. Society, the following were elected officers for 1883: Mr. Tompkins, '83, president; Mr. Gustin, '83, vice-president; Mr. Robinson, '84, secretary; and Mr. Bunce, '84, treasurer.

Some philanthropic Freshman has started a subscription for purchasing a clothes brush and blacking brushes. The amount left over after the investment will be offered as a prize to the one who succeeds in getting the finest polish on his shoes.

Miss Walker, '86, met with a severe accident a short time since. While working at her desk in the first-year laboratory, she stumbled and fell through a scuttle, which had been carelessly left open, receiving a severe shock. Though unconscious for some time, she is now rapidly convalescing.

We hope this may be a warning that the authorities will profit by and be more careful in the future.

Those mechanicals who go forth to "indicate" engines sometimes encounter fine specimens of the "fossil engineer"; but seldom is an example of this type of petrefaction found to compare with the recent discovery of an old codger, grown gray in the business, who, when interrogated as to the area of the piston, put on a look of owl-like wisdom, and replied, "Oh, this here piston hain't got no area."

A meeting of the Senior class was held on Thursday, Oct. 26. Messrs. Richards and Leonard were chosen to represent the class on the gymnasium committee; and Messrs. Eppendorff, Davis, and Underwood were elected a committee on class photographs. The consideration of the subject of a class supper was postponed until the next meeting, which will occur Thursday, Nov. 9, when the photograph committee will report.

Book Notices.

RAILROAD ECONOMIES, OR, Notes with Comments from a Tour over Ohio Railways under the Hon. H. Sabine, Commissioner of Railroads and Telegraphs. By S. W. Robinson, C. E., Professor of Mechanical Engineering, Ohio State University. New York: D. Van Nostrand. 18mo. pp. vi, 131.

This volume, which is one of the entertaining little books published in Van Nostrand's Science Series, will be found instructive and useful, especially by the civil engineer who has to build railroads or bridges. It touches upon the construction and protection of bridges, the form of roadbed, the laying of tracks, switches, crossings, etc., giving the author's opinions as to the best practice in regard to safety and economy. The only portion of the work which seems open to objection is that in relation to so-called "easement curves," short spiral curves introduced to ease the motion of the cars in passing from a straight to a curved track. The reasoning by which the author obtains the particular form of spiral adopted by him appears to contain an error, which, lest it escape the notice of the casual reader, may be briefly pointed out. It is assumed that in entering upon a curve, the necessary elevation of the outer rail and the depression of the inner one should, to avoid shocks, be so graduated that the rocking motion imparted to the car shall take place with a uniform acceleration. If this is true, it must be equally necessary to stop the motion in the same gradual way; but this point the author has entirely neglected; so that in passing from the easement curve to the main circular track curve, where the difference in the height of the two rails is constant at all points, the rocking of the car would be suddenly stopped, causing a shock similar to that received by a falling body when it strikes the earth. In going from the curve to the straight track, a reverse effect would of course be produced. It would seem that a curve based upon this idea is calculated to intensify the evil it is meant to cure, and is therefore not so well adapted to the needs of practice as a simpler form of easement curve; such, for instance, as that recently introduced on the Pan Handle Railroad by Mr. Ellis Holbrook.

An interesting feature of Prof. Robinson's treatise is a series of indicator diagrams illustrating the motion of railroad bridges during the passage of trains.

STRENGTH OF WROUGHT IRON BRIDGE MEMBERS. By S. W. Robinson, C. E., Prof. Mech. Eng., Ohio State University. Van Nostrand's Science Series. 18mo. pp. v, 175. D. Van Nostrand, New York.

This little book, No. 60 of the Science Series, is intended by the author to open to builders and examiners of wrought-iron bridges a number of formulæ which have not before been accessible in published form. Part I. is devoted to a consideration of the general theory of beams. The new formulæ adduced take account of longitudinal as well as simultaneously acting transverse loads, while the beam itself is held in various positions. This method of calculating the strains as acting simultaneously is evidently more rational than the usual way of calculating the transverse and longitudinal separately and adding them together, for tension on a bending beam would tend to straighten the beam and diminish the bending moment, while compression in such a case would heighten the effect of the "cross strain." Part II. gives a series of practical formulæ for beams, struts, columns, and semi-columns, and introduces tables comparing the actual results from experimental tests with the theoretical breaking strength as given by different standard formulæ, the results showing strongly in favor of the new formulæ.



YALE contemplates a co-operative society.

Mock disgust — a shampoo. — *Ex.*

Harvard is to have a veterinary department.

An independent ticket — a free pass. — *Puck.*

The citizens' movement — up to the bar. — *Puck.*

Une affaire du cœur — a dog-fight. — *Argonaut.*

Autumn leaves — November 30. — *Commercial Bulletin.*

Kick your corn through a window glass and the pane is gone. — *Ex.*

Henderson says he wishes he was a rumor, for a rumor soon gains currency. — *Ex.*

"Lay by something for a rainy day, my son, if it is only an umbrella." — *Transcript.*

At Williams a series of receptions are to be given by the professors to the various classes.

The female students of Michigan University talk of starting a paper, to be named the *Amulet*.

Dr. Oliver Wendell Holmes has sent his resignation in to the corporation. It is not, however, to go into effect until his successor has been found.

Dartmouth has turned over its college government to a committee on discipline, consisting of four Seniors, three Juniors, two Sophomores, and one Freshman.

Apropos of the falling leaves : —

"Her lips were like the leaves," he said,

"By autumn's crimson tinted."

"Some people autumn leaves preserve

By pressing them," she hinted.

Ex.

When he asked her but "yes" to his question to say, —
She was a maiden quite winsome and gay ;

All the four years in the light of his love

She had fluttered her feathers, the dear little dove, —
She had answered his glances and never said nay.

But in this last hour of his very last day,

When he asked her but "yes" to his question to say,

She said, looking up in his eyes just above,

"Why, no ; I could never, oh, never, say that,"

And firmly, but tenderly, passed him his hat.

Ex.



YALE is to be congratulated on the acquisition of a new athletic park containing thirty acres, and laid out into grounds for foot and base ball, cricket, and lacrosse. It is also to contain a quarter-mile track, and a grand stand costing \$5,000. The facilities offered by the college gymnasium are very poor. The *Record* considers Yale's present foot-ball team one of the best the college has ever put in the field.

The certificate which an American who has studied in a German university receives signifies little else, we have frequently heard, than that he had paid his fees. Mr. John T. Stoddard says, however, in the current *Century*, that he is convinced from personal acquaintance with at least a dozen graduates from American colleges, who have taken a degree at German universities, that the American who understands the German language will be received, on presentation of his college diploma, upon the same footing as his German *confrère*.

Among our most welcome exchanges is the *Mechanical Engineer*, which appears to improve with every issue. We like its compact form, and always open its pages with the comfortable feeling that we shall not have to winnow out our grain from a mass of chaff, as is too often the case with more pretentious journals.

Its pages are filled solidly with entertaining matter, — advertisements being restricted to the cover, — and its writers seem to have the rare faculty of conveying instruction without going so deeply into technical matters as to be incomprehensible. The series of letters entitled "The Professor in the Machine Shop" has now reached No. XX., and still continues, and a new series, entitled "Pattern Making, by a Pattern Maker," has begun, which, as far as one can



Diminutive Soph to second ditto. — "LET'S HAZE HIM."

judge from the first number, will be well worth a perusal.

The editors of the *Crimson* have challenged those of the *Advocate* to row a race in eights over the scratch course. The prizes are to be eight copper cents of a date not later than 1853. The *Crimson* hopes by its example to encourage similar informal contests, and to make boating more general in the university.

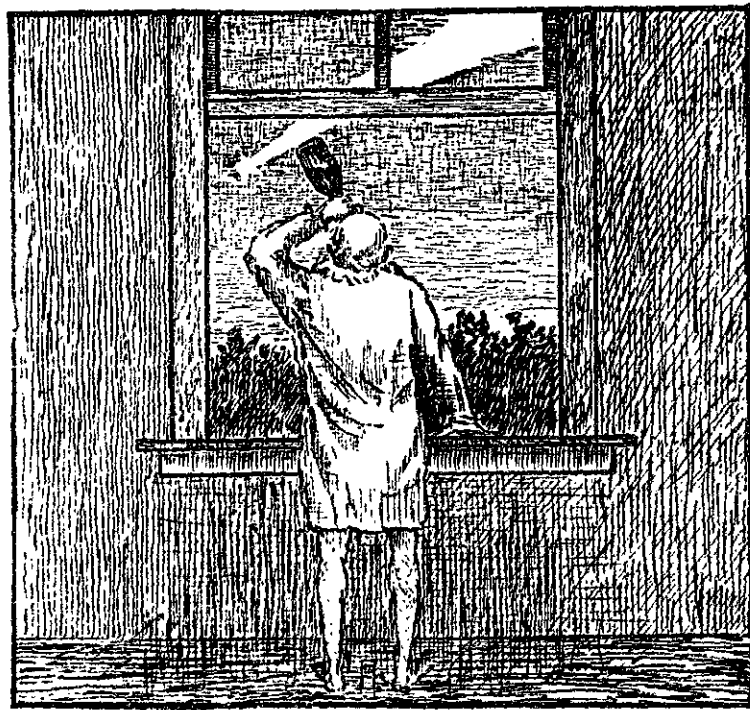
There is great dejection in the editorial sanctum — the *Tuftsian* has unceremoniously renounced THE TECH. Tuffy has grown aristocratic and can only exchange with those college papers which make pretensions to literary merit.

This is the unkindest cut of all; it shows only too plainly the dulness of our imaginative faculties, for we never dreamed that Tuffy was literary before.

The *Michigan Argonaut* has at length appeared in the sanctum. The cover bears the mark of Tiffany & Co., so we won't say a word. The *Argonaut* is a worthy rival of *The Chronicle*.

The Intercollegiate Press Association is again attracting attention. The idea is an admirable one and will receive THE TECH's hearty support.

The Beacon thus hides a tragedy in one short line. ERRATUM. — For *infernal*, on page 8, line 27, read *informal*.



STAR ROUTE INVESTIGATIONS.

The Rogers Memorial.

A MASS meeting of the students was held on Friday, Oct. 27, at 4.30, p. m., to consider the subject of a suitable memorial of the late President Rogers.

The meeting was well attended and a very gratifying interest shown in the project. Mr. Leonard, '83, was chosen chairman, and Mr. Chase, '83, secretary. After some discussion it was decided to elect a committee of five, one member from each class, and one from the school at large, to make investigation and submit plans to a general meeting of the students at a future time. The balloting for this committee resulted in the election of Messrs. Leonard, at large; Chase, '83; Bunce, '84; Pratt, '85; Percy, '86. The committee were instructed to report one week from date to a similar meeting. On account of the inconvenience of the hour, the meeting was postponed from Friday, Nov. 3, till the following week.

It is hoped that there will be a thorough interest taken in this matter by all the students, and a memorial erected which shall be satisfactory and suitable.

A questionable enterprise—interviewing celebrities. It's a cold day when a man has to warm himself at the hotel register.

THE TECH.

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Of the 1,058 students in the universities of Switzerland, only one hundred and thirteen study theology and one hundred and fifty-eight law. A growing tendency to avoid these professions is noticeable in Europe.

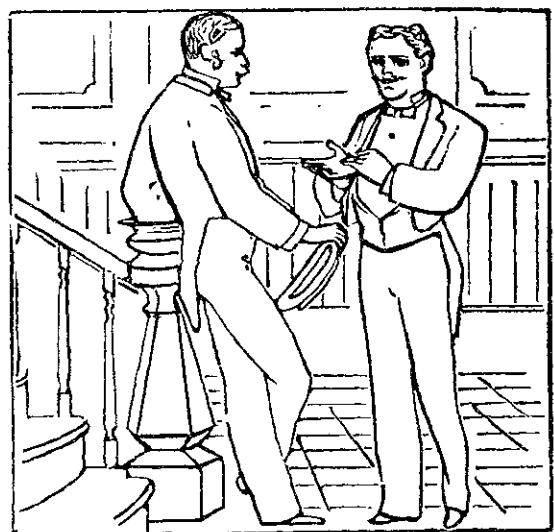
A timely action — setting the clock.

A house wedding — a parlor match.

A light employment — work in a gas-house.

"Small favors gratefully received," said the wallflower at the german.

The bequests to Harvard during the past year amount to \$400,000.



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THE TECH.

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There is talk in the Freshman class of forming a bicycle club; why should n't it be done? They are certainly enough riders in the class to form a large club. Although the season is almost ended, by organizing now, they would be fully prepared in the spring and could proceed at once to perfect and enlarge the club.

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—AND—

FURS.

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THE TECH.

The Massachusetts Institute of Technology.

BOYLSTON STREET, BOSTON.

THIS school of industrial science was opened in February, 1865. The first class graduated in 1868. The school is devoted to the teaching of science as applied to the various engineering professions, viz.: civil, mechanical, and mining engineering, as well as to architecture, chemistry, and natural history, physics and electrical engineering, and metallurgy.

Besides the above distinctly professional courses, the Institute offers scientific courses of a less technical character, designed to give students a preparation for business callings through the medium of a scientific training.

Modern languages are taught so far as is needed for the ready and accurate reading of scientific works and periodicals, and may at the option of the student be further pursued as a means of general training.

The constitutional and political history of England and the United States, political economy, and international law are taught, in a measure, to the students of all regular courses.

Applicants for admission to the Institute are examined in English grammar, geography, French, arithmetic, algebra, and geometry. A fuller statement of the requirements for admission will be found in the catalogue, which will be sent without charge on application.

A clear admission paper from any college of recognized character will be accepted as evidence of preparation in place of an examination.

Graduates of colleges conferring degrees are presumed to have the necessary qualifications for entering the third-year class in any of the regular courses of the Institute, and will be so admitted provisionally, on the presentation of their diplomas.

The feature of instruction which has been most largely developed in the school is laboratory training, shop-work and field-practice, to supplement, to illustrate, and to emphasize the instruction of the recitation and lecture room.

Surveying instruments are provided for field work in civil and topographical engineering. Shops fitted up for the use of both hand and machine tools and a laboratory of steam engineering have been established as a part of the instruction in mechanical engineering. The department of mining engineering and metallurgy has the use of laboratories in which the milling and smelting of lead, copper, silver, and other ores, in economic quantities, are regularly performed by the students themselves. The classes in architecture supplement the work of the drawing and designing rooms by the examination of structures completed or in course of erection, and by practical experiment in the laboratory of applied mechanics, testing the strength of materials and working out problems in construction. Extensive laboratories are provided for students in chemistry and in natural history, as well as laboratories in physics and applied mechanics, for the use alike of special students in these departments and of the students of the several regular courses.

On the successful completion of any one of the four-year courses of the Institute, a degree of bachelor of science will be conferred. The Institute is also empowered to confer the degree of doctor of science.

The Institute of Technology, as a recipient of a portion of the United States grant to colleges of agriculture and the mechanic arts, gives instruction in military tactics.

The fees for tuition of students taking the full course is \$200.00 a year. Besides this, \$25.00 or \$30.00 are needed for books and instruments. There are no separate laboratory fees. Only payment for articles broken is required.

Attached to the Institute are also two special schools, viz.: the "School of Mechanic Arts" and the "Lowell School of Industrial Design." The former gives a training in the use of tools together with elementary mathematics and drawing. English, French, and geography are also taught in this school. The fees for tuition are \$150.00 a year. The Lowell School teaches the making of designs for prints, carpets, wall-papers, laces, gingham, and other woven goods. A weaving department with a variety of looms is connected with this school. No charge for instruction is made.

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\$15.

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